



MEMORANDUM

TO: Mid-Coast IR TMDL Temperature Technical Working Group Members
FROM: Turner Odell, Oregon Consensus (OC)
SUBJECT: DRAFT – Action Items from August 15 Meeting – DRAFT
DATE: September 5, 2012

This memo follows up on the August 15, 2012, meeting of the Mid-Coast Implementation Ready Total Maximum Daily Load (IR TMDL) Temperature Technical Working Group (TWG), held at the Oregon Coast Community College in Newport, Oregon. The memo includes the following: proposed future meeting dates, identified action items and brief summaries of key topics discussed.

Upcoming Meetings

Please take note and calendar the following meetings.

Meeting	Date	Location
LSAC Meeting 7 and TWG Meetings	September 18-19, 2012	Florence OR (Siuslaw Valley Fire and Rescue)
LSAC Meeting 8 and TWG meetings	October (16-)17, 2012	TBD
LSAC Meetings 9 - 14 TWG Meetings	November 2012 – November 2013 (see Meeting Schedule & Workplan)	TBD

Action Items

Action Item	Who	Date
1. <u>Action Items</u> <ul style="list-style-type: none">Prepare draft Action Items memo and distribute to TWG members for review	OC (Turner) with DEQ	Complete
2. <u>Information Follow-up</u> <ul style="list-style-type: none">Post presentations and meeting documents to project website	DEQ	By cob, Aug 31

3. <u>Plan Heat Source Model Meeting</u> <ul style="list-style-type: none"> Plan and publicize meeting Submit questions to DEQ Generate graphs based on the model assumptions to demonstrate the impact of canopy density on stream temperature 	DEQ and OC TWG members Ryan M.	ASAP ASAP By date of meeting
4. <u>Mid-Coast Cold Water Refugia Data</u> <ul style="list-style-type: none"> Present fish presence and temperature data 	Dan Avery and Paul Engelmeyer	At next meeting
5. <u>Site Potential Vegetation</u> <ul style="list-style-type: none"> Revise/complete veg tables Provide information on height for maple and other riparian species 	Ryan M. Stan van de Wetering	Before next meeting Before next meeting

Temperature TWG Members Present: Stephen Hager (alternate for Liz Vollmer-Buhl - Siuslaw Watershed Council), Stan van de Wetering (Confederated Tribes of the Siletz Indians), Jeremy Groom (ODF), Kami Ellingson (USFS), Kevin Fenn (ODA), Jeff Light (Plum Creek Timber), Steve Steiner (BLM), Jeff Lockwood (NOAA Fisheries), Greg Peterson (Landowner/Oregon Small Woodlands), Paul Engelmeyer (Native Fish Society), Jim Welsh (Oregon Cattlemen's Association)

Project Team Members Present: Gene Foster, David Waltz, Ryan Michie, Josh Seeds, Karen Tarnow (DEQ), Jenny Wu (EPA), Jessie Conover (Oregon Consensus)

Other Attendees: Nina Bell (Northwest Environmental Advocates), Wayne Hoffman (MidCoast Watersheds Council), Randy Hereford (Starker Forests), Dan Avery (ODFW-OCCEP), Gary Springer (Starker Forests, Oregon Board of Forestry), Jim James (Oregon Small Woodlands), Mary Scurlock (Mary Scurlock & Associates), Maryanne Reiter (Weyerhaeuser), John Wooley (Oregon Cattlemen's Association)

Facilitation: Turner Odell (Oregon Consensus)

Meeting Notes

Key topics and themes:

During the third meeting of the Mid-Coast TMDL Temperature TWG attendees: (1) reviewed the recalibrated project timeline (2) continued discussion of site potential vegetation development (3) heard an overview of channel morphology and cold water refugia processes (4) reviewed two RipStream site modeling results and (5) agreed to setup an additional Heat Source model technical session. The meeting agenda, meeting materials (including PowerPoint presentations) will be available through the DEQ Mid-Coast TMDL project website at: (<http://www.deq.state.or.us/wq/tmdls/midcoast.htm>).

Stakeholder Questions, Issues, Concerns and Agency Responses

Prior to the August meeting, several TWG members had requested an extracurricular session on using Heat Source to assess associated uncertainty or perform model “validation” and assess confidence in the model. DEQ provided a response with clarification on the current expert view on types of uncertainty analysis appropriate to the model. DEQ determined that the request involved topics that would be likely be of interest to a broader group of TWG members and offered to participate in a technical session on model operation, uncertainty and related topics. It was emphasized that in order for DEQ to prepare for the session, specific questions should be posed in advance of the meeting.

Site Potential Vegetation Development Discussion

Ryan Michie (DEQ) presented the work that he completed since the last meeting, including an updated Site Potential Vegetation Zones Map, vegetation zone growth curves, site index and composition, Riparian Function & Stream Temperature (RipStream) Study model results, and example shade curves.

The primary revision to the map was the addition of significant oak woodlands in areas of the Mid-Coast Basin, shown as the “Valley Foothills Zone”. There was discussion about the relative percentage of maple, alder, cherry, cottonwood and other hardwoods occurring in various riparian areas and questions about how their weight is considered in the Heat Source model. DEQ also agreed to include maple in the plant associations for riparian areas and Stan van de Wetering agreed to provide data on height for maple and other riparian species. DEQ explained that the equations used to develop the site index for the primary vegetation associations (successional pathways) being considered are based on field data published in articles. Further discussion regarding the level of detail in available data for upland vs. riparian areas that might not be captured in the larger vegetation zones revealed the importance of a group understanding of how the Heat Source model uses the site potential vegetation information and how it responds to inputs for riparian zone width, canopy density, and resulting shading regimes. That is, the outstanding question concerns the degree to which site potential vegetation must reflect the detailed “local scale” vegetation composition (and resulting effective shade) or whether the effective shade associated with estimated site potential vegetation developed at a broader scale is adequate. DEQ and some members noted that the composition and species mix matters less than vegetation height of mature species in estimating effective shade. The group agreed to move ahead with the current species mixes and develop this understanding and perspective in the next Heat Source technical discussion.

There was a question about how soil types may affect growth (composition and site index) and a suggestion to talk to an expert to determine whether this is a big factor. It was mentioned that soil is a factor in determining the “site index”, an indicator of growth potential and is therefore reflected in that metric. One member indicated that forestry develops “site curves” for various areas and scales relevant to timber harvest planning, but this is not based on detailed soil maps. Similarly, Kevin Fenn (ODA) added that soils maps are produced at a scale useful for general planning but not for identifying site specific assessment of riparian vegetation “site capability”. DEQ clarified that it would be difficult to characterize site index (and hence vegetation height) at a site specific scale because the soil data does not currently exist at that scale.

There was discussion about the reason for the big difference in temperature at the upstream boundary between modeled natural conditions temperature and current condition temperature in the example Heat Source model results from the Rogue Basin. Jenny Wu (EPA) clarified that the temperature difference is attributable to unique characteristics of that site (i.e., the presence of a reservoir that was assumed to be absent in the natural conditions model run).

During the presentation of example site potential vegetation shade curves there was a question about how a relatively lower (by percentage) canopy density could result in a higher percent effective shade; DEQ walked through an example of the process. There was discussion about shade from topography and overhanging vegetation and DEQ discussed that the angle of the sun and topographic shading contribute to site specific effective shade percentages. DEQ also clarified that the effective shade models include the effects of shading directly over the stream from “overhanging” vegetation.

Channel Morphology & Cold Water Refugia Discussion

DEQ presented information on the relationship of channel morphology to cold water refugia and the role of cold water refugia in meeting Oregon’s temperature standards by ensuring beneficial uses are supported. Examples were presented of studies showing physical relationship of hyporheic flow and other channel characteristics to stream temperatures and cold water refugia.

The group discussed the applicability of published examples of responses of fish activity to cold water refugia to the Mid-Coast region. The Oregon Department of Fish and Wildlife and The Native Fish Society has data for Mid-Coast on cold water refugia and will present those data at the next Temperature TWG meeting. ODFW described the utility of snorkel surveys in identifying locations of preferred (and presumably higher quality) juvenile salmonid habitat. DEQ acknowledged that the costs and benefits of increased channel complexity (including in-stream features such as gravel bars) is complex and the TWG is being asked to provide information on where various features are likely to occur, based on channel morphology. It was pointed out that many of the coastal streams are greatly simplified (lack in-stream complexity), including several being modeled with Heat Source, and that the overall effects on stream temperature of adding complexity into the model can be estimated at a larger scale, but not at a site specific scale.

Headwaters/RipStream Discussion

Jeremy Groom (ODF) presented a summary of the RipStream Study methodology. The group discussed the RipStream methodology regarding riparian management area size and whether harvest methods represented the minimum allowed under the Forest Practices Act. Jeremy clarified that the RMA width represented an average consistent with minimum FPA requirements, and any departures were due to physical situation at a given harvest unit. Ryan Michie presented Heat Source model results for two RipStream sites (sites 5556 and 7854). Four models were produced for each site: a pre and post harvest calibration and pre and post harvest validation. It was observed that the effective shade and temperature model results closely follow the observed data collected in the field as well as ODF’s modeling results for the same sites. DEQ discussed the results including comparisons of pre and post harvest model stream temperatures indicated the timber harvest increased stream temperature by a maximum of 0.7 °C at site 5556 and 2.6 °C at site 7854. Discussion included questions about the accuracy and precision of the model calibration and the relationship to state temperature standard to which RipStream results were compared (the protecting cold water criterion of 0.3 °C human use allowance).

Heat Source Model Technical Discussion

DEQ clarified that the protecting cold water criterion expresses the state Environmental Quality Commission’s policy for minimizing anthropogenic heating of streams, and has a basis in the minimal amount of temperature change that were considered “measurable”.

DEQ clarified that the model error statistics measure the model fit on the absolute temperatures.

Errors observed on the calibrated model are within acceptable ranges and are less of a concern (even though they may be larger than the 0.3 °C human use allowance) because the primary purpose for the model is to predict the change in stream temperature (eg in response to a change in vegetation) as opposed to the absolute temperature. Changes in stream temperature are evaluated by comparing two models with modified inputs such as vegetation conditions). The model calibration errors are included in both models and tend to cancel each other out. DEQ committed to try to further address questions about model accuracy and precision in the Heat Source model technical session and asked the group to submit questions that they would like addressed.